

## Amendments to the Claims

1. (Cancelled) An isolated soluble non-fibrillar amyloid  $\beta$  protein assembly comprising 3-12 amyloid  $\beta$  proteins and having neurotoxic activity in organotypic brain slice cultures from adult animals.

2. (Cancelled) An isolated amyloid  $\beta$  protein assembly according to claim 1 wherein the assembly is a soluble non-fibrillar globular structure with dimensions approximately 4.9 - 5.3 nm as measured by atomic force microscopy having a molecular weight of 23-24 kD.

3. (Cancelled) An isolated amyloid  $\beta$  protein assembly according to claim 1 wherein the assembly is a soluble non-fibrillar globular structure with dimensions approximately 5.7 - 6.2 nm as measured by atomic force microscopy having a molecular weight of 27-28 kD.

4. (Cancelled) A method for measuring the vivo effects of the protein assembly of claim 1 comprising:

- (a) administering the protein assembly of claim to an animal, and
- (b) conducting the LTP procedure by;
  - (i) administering an electrical stimulus and
  - (ii) measuring the cell body spike amplitude over time.

5. (Currently amended) An *in vitro* method for A method for protecting brain cells against toxicity of amyloid  $\beta$  protein comprising blocking the formation or activity of an isolated, soluble, non-fibrillar, neurotoxic amyloid  $\beta$  protein assembly comprising 3-12 amyloid  $\beta$  proteins the protein assembly of claim 1 ; the method comprising:

- (a) preparing the assembly;
- (b) adding an inhibitor to the assembly, wherein the inhibitor blocks the formation or activity of the assembly, and;
- (c) blocking the formation or activity of the assembly.

6. (Currently amended) A method ~~for~~ of treating ~~or preventing~~ Alzheimer's disease and related dementias and memory disorders in human beings by blocking the formation or the activity of an isolated, soluble, non-fibrillar, neurotoxic amyloid  $\beta$  protein assembly comprising 3-12 amyloid  $\beta$  proteins ~~the protein assembly of claim 1~~, the method comprising:

- (a) preparing a composition comprising an inhibitor of the assembly, wherein the inhibitor blocks the formation or the activity of the assembly;
- (b) providing the composition to a human being; and
- (b) blocking the formation or activity of the assembly in the human being.

7. (Cancelled) A method for detecting the protein assembly of claim 1 comprising:

- (a) contacting the test material with 6E10 antibody; and
- (b) detecting binding of the antibody.

8. (Cancelled) A method for detecting the protein assembly as claim 1 comprising:

- (a) contacting test material with B103 neuroblastoma cells, and
- (b) measuring morphological changes in said cells.

9. (Cancelled) A method for detecting the protein assembly of claim 1 comprising:

- (a) contacting the test material with brain slice cultures, and
- (b) measuring brain cell death.

10. (Cancelled) A method for detecting the protein assembly as claim 1 comprising:

- (a) contacting test material with B103 neuroblastoma cells, and
- (b) measuring increases in fyn kinase activity.

11. (Cancelled) A method for identifying compounds that block receptor binding of the protein assembly of claim 1, comprising:

- (a) mixing test compound with cell culture media after formation of the protein assembly of claim 1.
- (b) contacting the mixture of 10 (a) with B103 cells or other neuronal cells.
- (c) adding a labeled reagent that can bind to the protein assembly of claim 1.
- (d) detecting the presence of the labeled reagent bound to the protein assembly of claim 1.

12. (Cancelled) A method for identifying compounds that block formation of the protein assembly of claim 1, comprising:

- (a) mixing test compound with media before in the procedure to form the protein assembly of claim 1, and
- (b) contacting the mixture of 10 (a) with B103 cells or other neuronal cells.
- (c) adding a labeled reagent that can bind to the protein assembly of claim 1.
- (d) detecting the presence of the labeled reagent bound to the protein assembly of claim 1.
- (e) test compounds exhibiting more inhibition of receptor binding of the protein assembly of claim 1 when the test compound is added before the formation of the protein assembly of claim 1 compared with addition of test compounds after formation are compounds that block formation of the protein assembly of claim 1.

13. (New) The method of claim 5, wherein the neurotoxicity of the assembly is inhibited.

14. (New) The method of claim 13, wherein the inhibition of neurotoxicity protects brain cells.

**15. (New)** The method of claim **14**, wherein the brain cells are from the hippocampus of an animal.

**16. (New)** The method of claim **15**, wherein the animal is a mouse.

**17. (New)** The method of claim **14**, wherein the brain cells are PC12 cells.

**18. (New)** The method of claim **14**, wherein the brain cells are HN2 cells.

**19. (New)** The method of claim **14**, wherein the brain cells are B103 cells.